

**IN THE UNITED STATES DISTRICT COURT
FOR THE DISTRICT OF NEBRASKA**

DAVE BARRETT and CLEAN HARBORS)	
ENVIRONMENTAL SERVICES, INC.,)	
)	
Plaintiffs,)	7:07CV5014
)	
vs.)	ORDER
)	
RHODIA, INC.,)	
)	
Defendant.)	

This matter is before the court on the defendant's Motion to Exclude Expert Opinions and Testimony ([Filing No. 45](#)).¹ The defendant filed a brief ([Filing No. 46](#)) and an index of evidence ([Filing Nos. 47-49](#)) in support of the motion. The plaintiffs filed a brief ([Filing No. 52](#)) and an index of evidence ([Filing No. 58](#)) in opposition to the defendant's motion. The defendant filed a brief ([Filing No. 60](#)) in reply.

BACKGROUND

This case arises from the collapse of the plaintiff Dave Barrett on June 27, 2003. See [Filing No. 19](#). The Second Amended Complaint alleges the following facts. Mr. Barrett was employed by Clean Harbors Environmental Services, Inc. (Clean Harbors) as an ash technician. *Id.* ¶ 3. As part of the ash fixation process, Mr. Barrett worked with 55 gallon drums of solid phosphorus pentasulfide (P_2S_5). *Id.* ¶ 3. The P_2S_5 drums were manufactured and sold to Clean Harbors by the defendant. *Id.* ¶ 4. A risk associated with P_2S_5 drums is the production of hydrogen sulfide, an odorless, colorless, lethal gas, created when water combines with the P_2S_5 . *Id.* ¶ 5. The P_2S_5 drums were sold in 1998 without a warning about the risk related to condensation, a risk then-known to the defendant. *Id.* ¶ 6. On June 27, 2003, a P_2S_5 drum was opened in Mr. Barrett's vicinity. *Id.* ¶ 7. Unknown to Mr. Barrett or his co-workers, condensation created hydrogen sulfide gas in

¹On December 21, 2007, this matter was transferred from Chief Judge Joseph F. Bataillon to the undersigned magistrate judge pursuant to [28 U.S.C. § 636\(c\)](#) and consent of the parties. **See Filing No. 35.**

the drum. *Id.* ¶ 8. Mr. Barrett was exposed to the hydrogen sulfide gas causing him injuries. *Id.* Based on these facts, the plaintiffs initially alleged claims for negligence, strict liability and loss of consortium. However, the plaintiffs have voluntarily dismissed the negligence claim. **See** [Filing No. 63](#). The plaintiffs allege the defendant is strictly liable for Mr. Barrett's injuries by reason of the defective design, manufacture and assembly of the drum and based on the defendant's failure to provide adequate warnings to foreseeable users of the drums. **See** [Filing No. 19](#) ¶¶ 12-13. Clean Harbors claims an interest in this matter for subrogation of benefits paid pursuant to Nebraska's Worker's Compensation Act, [Neb. Rev. Stat. § 48-118](#). **See** [Filing No. 19](#) ¶ 1.

The defendant denies liability. The defendant contends, based on its own expert witness, Mr. Barrett could not have been exposed to a sufficient concentration of hydrogen sulfide gas from the drum to cause his injuries. In contrast, the defendant's expert witness opines Mr. Barrett inhaled P_2S_5 dust. Once such dust is inhaled, the moisture in the lungs converts the chemical to hydrogen sulfide. Accordingly, Mr. Barrett's symptoms could have been caused by inhalation of a small amount of P_2S_5 dust, according to the defendant. The defendant argues there are no allegations that any defects in the defendant's product or packaging created dust. Instead, the defendant states Clean Harbors' own dangerous procedures must have created the dust.

The parties allege there are following additional facts regarding the motion to exclude. These factual allegations appear undisputed and supported by the record.

The ash fixation process occurred inside a building at the Clean Harbors plant with a three floor platform: a ground floor where a roll-off collects the ash, a second floor with a mixer, and a third floor where the 55 gallon drums of P_2S_5 were placed and could be poured into a chute leading to the mixer on the second floor. The floors of the platform are made of open steel gratings. Clean Harbors developed a funnel to fit the top of the 55 gallon drums. Once the funnel was in place, the drum would be lifted by chain hoist, inverted, and inserted into the chute.

Four workers participated in the ash fixation process on June 27, 2003. Clean Harbors' employees had not used P_2S_5 drums in approximately one year. However, Craig Wheeland was on the third floor switching the drums of P_2S_5 . Mr. Wheeland had opened

and closed one drum of the P_2S_5 and removed one near-empty drum from the third floor chute. Tom Sohlberg, Jim Webb, and Mr. Barrett were on the second floor approximately 12-14 feet below the third floor. They were about to open the chute assembly because of a perceived problem with a valve in the assembly. The three stood very close together. Mr. Barrett was next to the chute assembly, with Mr. Webb standing at his shoulder on the right and Mr. Sohlberg approximately one step away from Mr. Barrett.

As Mr. Barrett started to put a wrench to a bolt on the chute assembly, he “went down.” Mr. Webb could not get a response from Mr. Barrett, and then Mr. Webb felt something “take his breath”. Sensing something wrong, Mr. Webb and Mr. Sohlberg helped Mr. Barrett out a door on the second level. It took about 20 seconds for the three to evacuate. Mr. Webb later had a headache he attributed to stress. Mr. Sohlberg had no symptoms. Both men went to the emergency room, were evaluated and released without problems.

Mr. Wheeland was later found dead on the third floor. Mr. Wheeland’s autopsy report initially stated he died of natural causes. Several months later, the report was amended as follows.

The manner of death is being reclassified on this case due to information received concerning co-workers['] exposure to phosphorous pentasulfide and/or its decompositional elements. The death is reclassified as an accidental death with contributing factors of underlying heart disease.

See [Filing No. 58](#), Ex. A.

Clean Harbors hired Terracon, an independent environmental company, to investigate the facts surrounding the June 27, 2003 incident. Terracon issued a report of its findings on January 8, 2004, which noted:

Phosphorus pentasulfide will not react to form hydrogen sulfide without water. The source of moisture could be from when the drum was packaged, when the drum was opened and exposed to air, or a potential leak or opening in the drum (e.g., broken or worn seal) that allowed moist air or water to enter the drum.

See Filing No. 48 - [Ex. D\(1\)](#) Terracon Report p. 5.

Terracon inspected and tested the drum the plaintiffs claim was the source of hydrogen sulfide on June 27, 2003. Terracon did not “observe any cracks or holes that

would allow contaminants to enter, or P_2S_5 or hydrogen sulfide to leak out of the drums”. *Id.* p. 11. Terracon performed a leak test on the subject drum and found it to be air-tight. *Id.* p. 12-13. Terracon weighed the drum and found no weight loss in the drum; no degradation of the contents of the drum was noted. *Id.* p. 12. Terracon measured the concentration of hydrogen sulfide in the 55 gallon drums of P_2S_5 at Clean Harbors and concluded that the subject drum may have had a maximum concentration of 5,500 parts per million (ppm). *Id.* p. 21. Terracon reviewed available models and estimation methods to calculate potential exposure concentrations from the subject drum. *Id.* p. 21. Terracon’s exposure concentration estimations assumed a concentration level of 5,500 ppm and a single release of hydrogen sulfide from the drum rather than a continuous release. *Id.* Terracon prepared a table of exposure concentrations for hydrogen sulfide from the subject drum at different distances, which showed a range of 2.3 ppm to 120 ppm at a distance of 12 feet from the drum. *Id.* & Appendix J to Report.

The defendant retained Dr. Michael Fox to conduct a chemical accident reconstruction of the June 27, 2003 incident. Dr. Fox has a Ph.D. in physical chemistry and as part of his chemical reconstruction conducted drum opening experiments to determine the dispersion of hydrogen sulfide (H_2S) from a 55 gallon drum. **See** Filing No. 48 - [Ex. C](#) Dr. Fox Aff. ¶¶ 1-2. Dr. Fox determined Mr. Barrett was 12-14 feet below the place where the P_2S_5 drum was opened. *Id.* ¶ 3. Dr. Fox conducted drum opening tests to assess the hydrogen sulfide exposure to a person 12-14 feet below the top of a P_2S_5 drum containing hydrogen sulfide. *Id.*

Dr. Fox conducted several different types of experiments. First, Dr. Fox used an empty 55 gallon drum, similar to the drums containing the P_2S_5 , with a starting concentration of 4,000 to 5,000 ppm of hydrogen sulfide. *Id.* ¶ 4. The lids on the drums were opened and the air around the drums was monitored for H_2S . *Id.* The H_2S concentration within 18 inches of the drum did not exceed 130 ppm at any time. *Id.* Monitors at the floor level just outside the drum showed zero H_2S . *Id.* & Attach. C at 7.4.

Second, Dr. Fox conducted drum opening experiments using the actual Clean Harbors P_2S_5 drums. *Id.* ¶ 5. These drums were identical to the subject drum and contained between 5,000 and 7,000 ppm of hydrogen sulfide. *Id.* Using H_2S monitors, Dr.

Fox opened the drums to determine how hydrogen sulfide dispersed from them. *Id.* The highest concentration measured was 3 ppm at 18 inches from the drum at drum level. *Id.* & Attach. D at 8.2-8.3. Dr. Fox explained the different results in the two tests based on the containment of H₂S by volume in the drum headspace. *Id.* ¶ 6.

In addition to experimental measurements of the dispersion of H₂S out of 55-gallon drums, Dr. Fox performed gas dispersion calculations and modeling. *Id.* ¶ 7. In his dispersion model he assumed 10,000 ppm H₂S in the headspace of the drum that all of the gas only dispersed downward in a 1/4th spherical cone, to give the plaintiffs the benefit of any doubt. *Id.* Additionally, Dr. Fox used the “balloon model,” which mathematically overestimates the concentration of gas at any given distance from the drum. *Id.* The result of his dispersion modeling indicates the maximum concentration of H₂S gas at 12-14 feet from the drum was less than 10 ppm. *Id.*

Dr. Fox computed the density of dispersed H₂S gas. *Id.* ¶ 8. Air has a density of 1.0 and pure hydrogen sulfide has a density relative to air of 1.2. *Id.* When hydrogen sulfide with a concentration level of 5000 ppm combines with air the density is reduced to 1.001. *Id.* A relative gas density of 1.001 would not be affected by gravity. *Id.* Other forces of nature, such as thermal gradients and air movements counter the affect of gravity in most natural situations. *Id.*

Based on the rapid dispersion of the hydrogen sulfide in the drum opening tests and dispersion modeling, Dr. Fox concluded Mr. Barrett could not have been exposed to 500 to 700 ppm level of hydrogen sulfide or an amount which would cause serious injury. *Id.* ¶ 9. Rather, Dr. Fox concluded Mr. Barrett inhaled P₂S₅ dust. *Id.* ¶ 10. The inhalation of 6.75 mg of dust, an extremely small particle, can cause unconsciousness. *Id.* Once P₂S₅ is inhaled, the moisture in the lungs converts the chemical to hydrogen sulfide. *Id.*

In the instant motion, the defendant seeks to exclude certain opinion testimony from Dr. Gerti Janss, Dr. Terry Himes, Dr. Anne Talbot, and Edward Ziegler. The defendant argues certain of the causation opinions given by these experts are unsupported by testing, scientific studies, or evidence in the record. Specifically, the defendant contends the plaintiffs’ expert witnesses fail to provide a scientific basis for the level of the plaintiffs’ inhalation of hydrogen sulfide. Rather, according to the defendant, the plaintiffs’ expert

witnesses merely assume Mr. Barrett suffered sufficient exposure to cause his injury. Additionally, the defendant argues Mr. Ziegler's opinions that the drum was defective are not supported by scientific methodology and are unsupported by his observations. Finally, the defendant contends Mr. Ziegler's opinions about Clean Harbors' monitoring are unsupported by data, contradict other evidence in the record, and constitute improper expert testimony.

The plaintiffs contend the contested expert witness opinions are sufficiently reliable and relevant based on the facts of this case. Specifically, the plaintiffs argue their expert witnesses need not define the quantity of hydrogen sulfide exposure by mathematical precision. The plaintiffs state the temporal proximity of Mr. Barrett's symptoms to an identified toxic agent from an identified source with a possible range of exposure satisfies the burden. The plaintiffs state the expert witnesses rely on the November 2003 Terracon report showing the existence of a concentration of hydrogen sulfide and other research linking Mr. Barrett's symptoms to "a discrete, recognized release" of hydrogen sulfide gas. The plaintiffs contend Mr. Ziegler's opinions are permissibly based on his experience and observations.

ANALYSIS

Rule 702 permits expert opinion testimony only under particular circumstances:

If scientific, technical, or other specialized knowledge will assist the trier of fact to understand the evidence or to determine a fact in issue, a witness qualified as an expert by knowledge, skill, experience, training, or education, may testify thereto in the form of an opinion or otherwise, if (1) the testimony is based upon sufficient facts or data, (2) the testimony is the product of reliable principles and methods, and (3) the witness has applied the principles and methods reliably to the facts of the case.

Fed. R. Evid. 702; **see also** *Daubert v. Merrell Dow Pharms., Inc.*, 509 U.S. 579 (1993); *Kumho Tire Co. v. Carmichael*, 526 U.S. 137 (1999).

The proponent of the expert testimony must prove its admissibility by a preponderance of the evidence. *Daubert*, 509 U.S. at 592-93 & n.10; *Marmo v. Tyson Fresh Meats, Inc.*, 457 F.3d 748, 757-58 (8th Cir. 2006). "Expert testimony assists the

trier of fact when it provides information beyond the common knowledge of the trier of fact.” [Kudabeck v. Kroger Co., 338 F.3d 856, 860 \(8th Cir. 2003\)](#). Further, the proponent must show “the expert is qualified to render the opinion and that the methodology underlying his conclusions is scientifically valid.” [Marmo, 457 F.3d at 757-58](#).

“A trial judge must make a preliminary assessment of whether the proffered expert’s methodology is both scientifically valid and applicable to the case.” [Bland v. Verizon Wireless, \(VAW\) L.L.C., 538 F.3d 893, 896 \(8th Cir. 2008\)](#) (citation omitted). Such assessment “is a flexible one designed to ‘make certain that an expert, whether basing testimony upon professional studies or personal experience, employs in the courtroom the same level of intellectual rigor that characterizes the practice of an expert in the relevant field.’” [Marmo, 457 F.3d at 757](#) (quoting [Kumho Tire, 526 U.S. at 152](#)). Accordingly, the “testimony is inadmissible if it is speculative, unsupported by sufficient facts, or contrary to the facts of the case.” [Id.](#)

The proponent may show relevance by showing “the reasoning or methodology in question is applied properly to the facts in issue.” [Id. at 758](#). Doubts regarding the usefulness of an expert’s testimony are resolved in favor of admissibility. [Id.](#) “However, a court should not admit opinion evidence that ‘is connected to existing data only by the *ipse dixit* of the expert.’ When the analytical gap between the data and proffered opinion is too great, the opinion must be excluded.” [Id.](#) (quoting [Gen. Elec. Co. v. Joiner, 522 U.S. 136, 146 \(1997\)](#)).

The “evidentiary inquiry is meant to be flexible and fact specific, and a court should use, adapt, or reject **Daubert** factors as the particular case demands.” [Unrein v. Timesavers, Inc., 394 F.3d 1008, 1011 \(8th Cir. 2005\)](#). There is no single requirement for admissibility as long as the proffer indicates the expert evidence is reliable and relevant. [Id.](#) The question is whether the expert’s opinion is sufficiently grounded to be helpful to the jury. [Id. at 1012](#). “[N]othing in Rule 702, **Daubert**, or its progeny requires ‘that an expert resolve an ultimate issue of fact to a scientific absolute in order to be admissible.’” [Kudabeck, 338 F.3d at 861](#) (quoting [Bonner v. ISP Tech., Inc., 259 F.3d 924, 929 \(8th Cir. 2001\)](#)).

The court may consider several factors in determining the soundness of scientific methodology including: (1) whether the theory or technique can be and has been tested; (2) whether the theory or technique has been subjected to peer review and publication; (3) the known or potential rate of error and the existence and maintenance of standards controlling the technique; and (4) whether the theory or technique used has been generally accepted in the relevant scientific community. [Daubert, 509 U.S. at 593-594](#); **see also** [Kumho Tire, 526 U.S. at 149-50](#) (ruling that the **Daubert** factors may be applied to determine the admissibility of an engineering expert's testimony). Under **Daubert**, district courts apply a number of nonexclusive factors in performing this role, including "whether the expertise was developed for litigation or naturally flowed from the expert's research;" whether the expert ruled out other alternative explanations; and whether the expert sufficiently connected the proposed testimony with the facts of the case. [Lauzon v. Senco Prods., Inc., 270 F.3d 681, 686-87 \(8th Cir. 2001\)](#). Further, the **Kumho Tire** Court emphasizes "relevant reliability concerns may focus on personal knowledge or experience" and the factors used to evaluate an expert's testimony "depend[] upon the particular circumstances of the particular case at issue." [Kumho Tire, 526 U.S. at 150](#).

Some evidence "cannot be evaluated accurately or sufficiently by the trial judge" in the procedural environment of a ruling on a motion *in limine*. [Jonasson v. Lutheran Child & Family Servs., 115 F.3d 436, 439 \(8th Cir. 1997\)](#). To the extent a party challenges the probative value of the evidence, an attack upon the probative sufficiency of evidence relates not to admissibility but to the weight of the evidence and is a matter for the trier of fact to resolve. [United States Beasley, 102 F.3d 1440, 1451 \(8th Cir. 1996\)](#); [United States v. Dico, Inc., 266 F.3d 864, 871 \(8th Cir. 2001\)](#) (holding "the sufficiency of the factual basis of . . . [an expert's] theory was open to any challenge [the defendant] . . . desired to mount on cross-examination, but that sufficiency was not a basis for excluding [the expert's] testimony altogether"))).

In the motion before the court, the defendant primarily challenges the plaintiffs' expert witnesses' causation opinions. "To prove causation in a toxic tort case, a plaintiff must show both that the alleged toxin is capable of causing injuries like that suffered by the plaintiff in human beings subjected to the same level of exposure as the plaintiff, and that

the toxin was the cause of the plaintiff's injury." [*Bonner v. ISP Techs.*, 259 F.3d 924, 928 \(8th Cir. 2001\)](#). These are two distinct showings known as general causation and specific causation. [*Junk v. Terminix Intern. Co. Ltd.*, 577 F. Supp. 2d 1086, 1091 \(S.D. Iowa 2008\)](#). In this case, the defendant does not challenge general causation, but argues there is no scientific evidence of specific causation. See [Filing No. 60](#) - Reply p. 1-2. In this context, "a plaintiff need only make a threshold showing that he or she was exposed to toxic levels known to cause the type of injuries he or she suffered." [*Mattis v. Carlon Elec. Prods.*, 295 F.3d 856, 860-61 \(8th Cir. 2002\)](#). In fact, "[i]t is sufficient for a plaintiff to prove that she was exposed to a quantity of the toxin that 'exceeded safe levels.'" [*Bonner*, 259 F.3d at 931](#) (citation omitted). The defendant contends there is no scientific evidence in the record, from any source, showing Mr. Barrett was exposed to the prerequisite toxic quantity of hydrogen sulfide. Specifically, the defendant contends, if hydrogen sulfide did exit from the drum, no evidence shows a toxic quantity could have traveled to Mr. Barrett's location.

A. Dr. Janss

Dr. Janss is a toxicologist and examined Mr. Barrett. Dr. Janss provided a curriculum vitae, several letters, and a case study which constitute her opinions. The defendant opposes testimony regarding certain opinions expressed by Dr. Janss in a letter dated March 15, 2005. Specifically, Dr. Janss opined:

1. Mr. Barrett suffered an anoxic brain injury after inhaling hydrogen sulfide and passing out.
2. Hydrogen sulfide is heavier than air and would filter down from the third floor to the second floor.
3. From Mr. Barrett's symptom of passing out, the hydrogen sulfide gas was mostly likely in the range of the range of 500 to 700 parts per million.

See [Filing No. 48 p. 7 - Ex. D\(2\)](#) March 15, 2005 Letter.

Dr. Janss was medically trained as an internist, and is board certified in toxicology and emergency medicine. *Id.* p. 2 - Dr. Janss Curriculum Vitae; [Filing No. 49 - Ex. E](#) Dr. Janss Depo. p. 8. Dr. Janss served in an emergency room in Rapid City, South Dakota for ten years and has over fourteen years' experience taking care of overdose cases as

part of her toxicology experience. *Id.* p. 6-9. Since 1983, Dr. Janss has worked primarily as an allergist and continues to see patients who have toxicology-related problems. *Id.* p. 9.

Prior to March 2005, Dr. Janss had not been involved in a case dealing with phosphorous pentasulfide. *Id.* p. 11. However, Dr. Janss did see a family in the emergency room who had been exposed to hydrogen sulfide from the sewer. *Id.* p. 11-14. The family had suffered mild poisoning experiencing nausea and headaches, but did not pass out due to the exposure. *Id.* p. 11-12. Dr. Janss is not aware of any ongoing problems suffered by the family members. *Id.*

Dr. Janss saw Mr. Barrett in March 2005, almost two years after the incident. Mr. Barrett told Dr. Janss that while checking a valve he suddenly felt like he was going to pass out and was concerned he was having a heart attack when he lost consciousness. Dr. Janss obtained an article on the internet by Jack Thrasher, Ph.D. during the office visit and had Mr. Barrett's wife review the symptoms described in the article to note Mr. Barrett's symptoms. Dr. Janss also consulted a standard toxicology text book, Casarett & Dual's, regarding signs of hydrogen sulfide poisoning. Based on symptoms disclosed by Mr. Barrett and his wife, and this review of the literature, Dr. Janss wrote a letter to Dr. Talbot on March 15, 2005, with the conclusion: "There is no doubt that Mr. Barrett suffered an anoxic brain injury, after inhaling the hydrogen sulfide and passing out. I will be happy to support you in any way to be sure that Mr. Barrett obtains permanent disability for the hypoxic brain injury, secondary to exposure of hydrogen sulfide." **See** Filing No. 48 p. 7 - [Ex. D\(2\)](#) March 15, 2005 Letter.

When making her conclusions, Dr. Janss did not know the distance between the P₂S₅ drum and Mr. Barrett or the concentration or volume of hydrogen sulfide in the drum. **See** Filing No. 49 - [Ex. E](#) Dr. Janss Depo. p. 32. Janss does not know how hydrogen sulfide disperses, but thinks it would travel downward because it is heavier than air based on molecular weight. *Id.* p. 31-33, 107-108. However, Dr. Janss' research uncovered only cases in which the hydrogen sulfide gas rose rather than fell. *Id.*

Dr. Janss acknowledged the concentration of hydrogen sulfide has more to do with the extent of injury than duration of exposure. *Id.* p. 96-97. Dr. Janss reasoned the

concentration of hydrogen sulfide “up there on the third floor must have been above 700 parts per million because that’s when you die with several breaths.” *Id.* p. 30. Further, the molecular weight caused the hydrogen sulfide to move down “[s]o if it was 700 up there, it probably was 500 on the bottom when he got the sniff of air.” *Id.* p. 31. Based on her research, Dr. Janss stated the concentration would likely be between 500 to 700 parts per million to cause unconsciousness. *Id.* p. 34, 78.

In addition to concentration, the period of time during which Mr. Barrett was unconscious is critical because, Dr. Janss testified, the damage occurred while Mr. Barrett was unconscious – the damage is immediate. Dr. Janss presumes Mr. Barrett was unconscious from one to two minutes based on information from Mr. Barrett’s co-workers. *Id.* p. 38. Dr. Janss admitted any damage to the brain cells ceases when a person regains consciousness. *Id.* p. 43. This is because, Dr. Janss acknowledged, hydrogen sulfide does not accumulate; the body detoxifies and oxidizes gas quickly. *Id.* p. 40, 43-44. Dr. Janss does not know the length of Mr. Barrett’s detoxification process because it depends on the amount of hydrogen sulfide he inhaled. *Id.*

Dr. Janss believes Mr. Barrett suffered brain cell damage from a lack of oxygen to the brain. *Id.* p. 42. Dr. Janss acknowledged that if someone is resuscitated immediately, after a respiratory arrest, there would not be any brain damage. *Id.* p. 43-44. In contrast, lack of oxygen for six minutes will cause death. *Id.* p. 44. However, Dr. Janss does not know the minimum duration of oxygen deprivation which would cause damage to the “higher cells” of the brain and did not do any research on this issue. *Id.* p. 77-78.

Dr. Janss admitted there is no evidence in the hospital records supporting Dr. Janss opinion Mr. Barrett suffered a toxic exposure to hydrogen sulfide. *Id.* p. 20. Dr. Janss admitted that after inhalation P_2S_5 dust will convert to hydrogen sulfide gas, as a result of water in the mucus membranes, but she does not know how quickly the process occurs. *Id.* p. 101-102.

The defendant argues Dr. Janss’ testimony should be limited because she provides no scientific support for her assumption the hydrogen sulfide could disperse from the P_2S_5 drum in concentrations sufficient to harm Mr. Barrett where he worked. Specifically, the defendant contends Dr. Janss merely assumed Mr. Barrett inhaled a toxic amount of

hydrogen sulfide because he passed out. Additionally, Dr. Janss does not rule out other causes of Mr. Barrett's injury, for example inhalation of P_2S_5 dust. Finally, Dr. Janss formed her opinion without having critical information such as Mr. Barrett's distance from the P_2S_5 drum, the concentration of hydrogen sulfide leaving the drum, and manner of dispersal. Nor does Dr. Janss rely on other expert witness testimony with regard these critical facts.

The plaintiffs argue sufficient foundation supports Dr. Janss' opinion testimony based on factors other than those identified by the defendant. Specifically, the plaintiffs contend Dr. Janss has analyzed the temporal relationship between the hydrogen sulfide exposure and Mr. Barrett's symptoms, reviewed Dr. Himes' and Dr. Talbot's reports, reviewed Mr. Barrett's medical records, and reviewed literature linking hydrogen sulfide exposure to neurologic harm. Additionally, the plaintiff states Dr. Janss "ruled in" hydrogen sulfide exposure as scientifically plausible. For these reasons, the plaintiffs argue the alleged deficiencies in the foundation for Dr. Janss' opinions impacts the credibility, rather than the admissibility of the opinions.

The plaintiffs fail to show Dr. Janss is qualified through her education, experience or otherwise to render an opinion about dispersal of hydrogen sulfide or Mr. Barrett's actual level of exposure to hydrogen sulfide gas. However, the plaintiffs have met their burden to show Dr. Janss is qualified to give opinions about Mr. Barrett's symptoms and whether these symptoms are consistent with exposure to particular levels of hydrogen sulfide gas. Further, while Dr. Janss may testify about the molecular weight of hydrogen sulfide, any testimony from her about her assumptions with regard to the dispersal of particular amounts hydrogen sulfide over any distance are inadmissible. It is clear from her testimony Dr. Janss does not know how hydrogen sulfide disperses. **See** Filing No. 49 - [Ex. E](#) Dr. Janss Depo. p. 31-33, 107-108. However, the plaintiffs met their burden of showing Dr. Janss may provide both reliable and relevant testimony generally about the effects of hydrogen sulfide exposure.

B. Dr. Himes

Dr. Himes is a doctor of osteopathic medicine specializing in neurology and has been a board certified neurologist for the past twenty years. Dr. Himes has been Mr.

Barrett's treating physician since August, 2004. Dr. Himes' opinions are contained in letters and office notes. **See** Filing No. 48 - [Ex. D\(3\)](#). The opinion which is the subject of the defendant's motion is:

Mr. David Barrett did suffer an injury as a direct result of exposure to . . . hydrogen sulfide gas on June 27, 2003 [and] suffered a brain injury insult as a direct consequence of this toxic exposure. To what effect impairment of his respirations may have caused lack of adequate oxygenation is uncertain but it is clear that he suffered a significant brain insult resulting in dementia.

[Id.](#) p. 33 - August 9, 2005 Letter.

Dr. Himes did no specific research in the area of neurotoxicology for this case, but relied on his training and experience. [Id.](#) p. 1 - February 20, 2008 Letter. Prior to treating Mr. Barrett, Dr. Himes never treated a patient exposed to hydrogen sulfide. Dr. Himes did not do any research specifically on the issue of hydrogen sulfide exposure prior to forming his opinion. **See** Filing No. 49 - [Ex. F](#) Dr. Himes' Depo. p. 7-8. The defendant states Dr. Himes' records contain no information regarding the specific concentration or volume of the hydrogen sulfide in the drum, the distance Mr. Barrett was from the drum, or any scientific analysis of the amount or concentration of hydrogen sulfide inhaled by Mr. Barrett. Further, Dr. Himes does not know the length of time Mr. Barrett was exposed to hydrogen sulfide or the concentration level of the hydrogen sulfide. **Id.** p. 9-10. Dr. Himes based his opinions, in part, on the assumption Mr. Barrett lost consciousness due to a "brief intense exposure" to hydrogen sulfide. **Id.** p. 10. However, Dr. Himes does not know the concentration level of hydrogen sulfide or dose necessary to cause brain trauma. **Id.** p. 17.

Based on this information, the defendant seeks to exclude Dr. Himes from testifying about any amount of hydrogen sulfide gas inhaled by Mr. Barrett or about medical causation - that Mr. Barrett suffered injury as a result of inhaling hydrogen sulfide gas. **See** [Filing No. 45](#) - Motion. The defendant contends Dr. Himes does not know what level of exposure to hydrogen sulfide constitutes an appreciable risk of causing dementia and does not know the concentration or degree of Mr. Barrett's exposure. The defendant argues Dr. Himes leaps from the unproven assumption of sufficient exposure to causation. The

defendant does not dispute Dr. Himes is qualified to testify about Mr. Barrett's dementia, the defendant argues Dr. Himes has no foundation to testify about the cause. **See** [Filing No. 46](#) - Brief p. 19-22.

The plaintiffs argue sufficient foundation supports Dr. Himes' opinion testimony based on factors other than those identified by the defendant. Specifically, the plaintiffs contend Dr. Himes has analyzed the temporal relationship between the hydrogen sulfide exposure and Mr. Barrett's symptoms, reviewed Dr. Janss' and Dr. Talbot's reports, and reviewed Mr. Barrett's medical records. Additionally, the plaintiff states Dr. Himes has ruled out other causes for Mr. Barrett's dementia and "ruled in" hydrogen sulfide exposure. For these reasons, the plaintiffs argue the alleged deficiencies in the foundation for Dr. Himes' opinions impacts the credibility, rather than the admissibility of the opinions.

The plaintiffs fail to show Dr. Himes is qualified through his education, experience or otherwise to render an opinion about the source of hydrogen sulfide exposure, Mr. Barrett's actual level of exposure to hydrogen sulfide gas or that such exposure was the cause of Mr. Barrett's dementia. Dr. Himes does not base his opinions on any particular level of hydrogen sulfide exposure. Further, Dr. Himes does not make any assumptions as to Mr. Barrett's actual exposure, nor does he know what level of exposure to hydrogen sulfide constitutes an appreciable risk of causing dementia. However, the plaintiffs have met their burden to show Dr. Himes is qualified to give opinions about Mr. Barrett's symptoms.

C. Dr. Talbot

Dr. Talbot is licensed in Nebraska as a Clinical Psychologist with post-doctoral training in neuropsychology. **See** Filing No. 48 - [Ex. D\(4\)](#) p. 2, Curriculum Vitae. Dr. Talbot has over twenty-three years of experience of providing mental health services including psychotherapy and neuropsychological assessment and treatment. *Id.* The plaintiffs state Dr. Talbot's role in this matter is to evaluate Mr. Barrett's condition and functional assessment. **See** [Filing No. 52](#) - Brief p. 33-34; Filing No. 49 - [Ex. G](#) Dr. Talbot Depo. p. 10. The plaintiffs contend Dr. Talbot is qualified to testify as any neuropsychologist could regarding what can and cannot cause her patient's symptoms.

The Dr. Talbot opinions which the defendant seeks to exclude are contained in her report dated August 19, 2005. **See** *id.* at p. 20 -Filing No. 48 - [Ex. D\(4\)](#). The defendant seeks to exclude any testimony (1) Mr. Barrett “inhaled hydrogen sulfide gas and sustained cerebral anoxia followed by toxic encephalopathy,” or (2) Mr. Barrett “was exposed to hydrogen sulfide gas in the range of 500-700 ppm.” **See** [Filing No. 45](#) - Motion.

Specifically, Dr. Talbot intends to testify, “based on her research and experience, that [Mr. Barrett’s] diagnosis – dementia – is one that can be caused by an anoxic brain injury such as H₂S poisoning.” **See** [Filing No. 52](#) - Brief p. 33-34. Dr. Talbot clearly states she is basing her diagnosis of dementia for exposure to a toxic substance (specifically hydrogen sulfide) on an assumption that Mr. Barrett was exposed to hydrogen sulfide gas in the range of 500-700 parts per million. **See** Filing No. 48 - [Ex. D\(4\)](#) p. 20, August 19, 2005, Letter. Dr. Talbot opines:

Based on my review of the history and [sic] reported and the results of my formal evaluation, I concluded Mr. Barrett did indeed suffer an injury as a result of exposure to phosphorous pentasulfide and hydrogen sulfide gas on June 27th 2004. . . . The acute phase of the injury would appear to be cerebral anoxia followed by toxic encephalopathy associated with exposure to high levels of hydrogen sulfide gas, a substance well-known to be profoundly neurotoxic.

Id.

The plaintiffs argue Dr. Talbot’s opinions and diagnosis are supported by (1) Dr. Talbot’s education, training, and experience to administer and interpret neuropsychological evaluations, as she did with Mr. Barrett; (2) the testing procedure being recognized as reliable; (3) Dr. Talbot’s reliance on her review of Dr. Janss’ report and literature regarding anoxic encephalopathy.

The defendant counters Dr. Talbot has no training or education in the area of toxicology. Dr. Talbot had not previously evaluated a patient exposed to hydrogen sulfide gas or who may have inhaled P₂S₅ dust. **See** Filing No. 49 - [Ex. G](#) Dr. Talbot Depo. p. 8. Dr. Talbot does not hold herself out as an expert on toxicology issues and stated “I am not an expert on exposure to hydrogen sulfide per se.” ***Id.*** p. 11. Dr. Talbot noted “the actual mechanism of hydrogen sulfide is not my area of expertise because I am not a toxicologist.

And so that – when I’m finding levels of impairment, then that implies damage.” *Id.* p. 18. Dr. Talbot admits she must rely on the accuracy of statements made by medical experts, like Dr. Janss. *Id.* However, the qualitative aspects of Mr. Barrett’s presentation and history support a diagnosis consistent with some form of toxic or anoxic encephalopathy, specifically that Mr. Barrett sustained damage to the cells in his brain due to oxygen deprivation and toxic exposure. *Id.* p. 16-20. Dr. Talbot admits she does not know the precise factors toxic exposure to hydrogen sulfide might add to oxygen deprivation. *Id.*

The plaintiffs fail to show Dr. Talbot is qualified through her education, experience, or otherwise to render an opinion about Mr. Barrett’s level of exposure to hydrogen sulfide gas or that Mr. Barrett inhaled any hydrogen sulfide gas. However, the plaintiffs have met their burden to show Dr. Talbot is qualified to give opinions about Mr. Barrett’s condition and whether his condition is consistent with cerebral anoxia followed by a toxic encephalopathy associated with exposure to hydrogen sulfide. Dr. Talbot’s opinions about the level or manner of Mr. Barrett’s exposure to hydrogen sulfide are not based on her own scientific analysis, but unverified assumptions of other witnesses. In any event, Dr. Talbot does not appear to rely on the quantity or method of exposure to sustain her opinions about Mr. Barrett’s condition. Further, since under either theory of injury propounded by the parties Mr. Barrett was exposed to hydrogen sulfide, Dr. Talbot’s opinion that Mr. Barrett’s condition is consistent with such exposure is both reliable and relevant.

D. Mr. Ziegler

Mr. Ziegler is a safety engineer and analyzed the June 27, 2003, incident based on his experience in safety consulting and safety management. Mr. Ziegler is not a chemist or a chemical engineer; he has no education, training or experience in chemical accident reconstruction. **See** Filing No. 47 - [Ex. A](#) Report & Attach. A to Report. Mr. Ziegler has a degree in Petroleum and Natural Gas Engineering. *Id.* Mr. Ziegler had no prior experience with P_2S_5 . *Id.* [Ex. B](#) Ziegler Depo. p. 18.

Mr. Ziegler theorizes a P_2S_5 drum was opened on the third floor releasing hydrogen sulfide gas. Mr. Ziegler concludes Mr. Barrett “[s]uffered injuries on Level 2 due to exposure to hydrogen sulfide (H_2S), apparently from the same drum Mr. Wheeland had just

opened with that material cascading down along and around the chute/valve assembly from Level 3 to Level 2.” *Id.* [Ex. A](#) Report at 7.

Mr. Ziegler did no testing, measuring, dispersion modeling, or other chemical analysis in this case because that was not his role. *Id.* [Ex. B](#) Ziegler Depo. p. 23-25; 32. Mr. Ziegler understood his role to be “looking at the regulatory and safety issues as opposed to measuring concentrations of chemicals.” *Id.* p. 25. Mr. Ziegler described this methodology:

I am not at this time using tests, surveys or other technical or scientific methods employed in either the safety management or hazardous waste industries as being either applicable or available for this analysis, other than test results and information contained in the documents here or referenced here.

Based on my experience in the safety consulting and safety management profession, I have used usual, accepted and normal methods to analyze this situation as would other safety professionals. I have not developed procedures for use in this litigation, but have used common, usual, typical, and accepted industry procedures and practices in the engineering and safety fields.

Id. [Ex. A](#) Report at 5-6.

As a basis for his opinion that Mr. Barrett inhaled hydrogen sulfide from the newly-opened drum, Mr. Ziegler “assumed from the doctors’ information that H₂S was the cause of those injuries.” *Id.* [Ex. B](#) Ziegler Depo. p. 35. Mr. Ziegler explained:

So, the point is, going back to concentrations and what I know about them, we know what we had in the drum. Let’s say somewhere in the range of 5,000 parts per million at a certain volume. We know that hydrogen sulfide is heavier than air. We know that Mr. Barrett is below. . . . So, we have – even though no one knows exactly what the concentration is, if the doctors are correct, then we had enough to cause the injuries.

I mean, just having a significant concentration to start with, 5,000 parts per million, and if the doctors say that was the cause of the injury, if they’re correct, then somewhere within the ranges we know that can cause injuries or death from hydrogen sulfide gas – and it’s published all sorts of different places and scales and ranges – we are in that range to start with; and through gravity, heavier than air and the short time frames, that’s – that’s it. . . It’s that simple.

Id. p. 45-46.

Mr. Ziegler did not test, inspect or scientifically evaluate the drums or the drum lids at Clean Harbors. Mr. Ziegler testified he “just looked” at the drums and felt no need to analyze the drums or their contents for any leak, failure or deterioration. **Id.** p. 25; 80. While Mr. Ziegler found no evidence of a condition which would permit the formation of hydrogen sulfide inside the drum, he assumes that there was a defect based on the fact that there was hydrogen sulfide in the drum stating, “It came from somewhere”. **Id.** p. 86. In his report, Mr. Ziegler indicates no analysis conducted to eliminate other causes for the hydrogen sulfide in the drum.

The defendant seeks to exclude Mr. Ziegler’s testimony in three broad areas:

1. Any opinion testimony suggesting Mr. Barrett inhaled hydrogen sulfide and was injured as a result of that inhalation, including any description or assumptions about the dispersal of hydrogen sulfide.
2. Any opinion testimony suggesting the P₂S₅ drums were defective and caused the creation of hydrogen sulfide gas in the drums.
3. Any opinion testimony suggesting Clean Harbors’ management or the health and safety department knowingly discontinued monitoring during the ash fixation procedure when using phosphorus pentasulfide.

See Filing No. 45 - Motion p. 2-3.

The plaintiffs argue Mr. Ziegler’s opinions are based on the temporal connection of Mr. Barrett’s collapse to Mr. Wheeland’s death. Additionally, Mr. Ziegler reviewed the records and depositions associated with this lawsuit. Finally, Mr. Ziegler made observations typical of his profession.

The plaintiffs fail to show Mr. Zielger is qualified through his education, experience, or otherwise to render an opinion suggesting Mr. Barrett inhaled hydrogen sulfide gas, including any description about the dispersal of hydrogen sulfide gas. Similarly, based on Mr. Zielger’s failure to do more than merely look at the P₂S₅ drums, the plaintiffs fail to show Mr. Ziegler’s testimony about defects in the drums is reliable or relevant to the facts of this case. Finally, the testimony the defendant seeks to exclude as opinion testimony regarding Clean Harbors’ monitoring practices, as set forth in (3) above, does not

constitute “opinion” testimony. To the extent Mr. Ziegler intended to testify about the practices solely as his opinions and not as actual facts, such testimony is not admissible. However, to the extent Clean Harbors’ actual monitoring practices are relevant to Mr. Zielger’s opinions, either he or another witness knowledgeable about those facts may testify about them. Upon consideration,

IT IS ORDERED:

The defendant’s Motion to Exclude Expert Opinions and Testimony ([Filing No. 45](#)) is granted in part and denied in part as more fully discussed above.

DATED this 12th day of January, 2009.

BY THE COURT:

s/ Thomas D. Thalken
United States Magistrate Judge